NEW SPECIES OF MYRTACEAE FROM ECUADOR

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ABSTRACT

Four new species of Myrtaceae from Ecuador are described and illustrated: Calyptranthes websteri, Eugenia concava, Eugenia grossa, and Myrcia subcordifolia.

RESUMEN

Se describen y se ilustran cuatro especies nuevas de Myrtaceae del Ecuador: Calyptranthes websteri, Eugenia concava, Eugenia grossa, y Myrcia subcordifolia.

INTRODUCTION

In preparation for the treatment of Myrtaceae for the Flora of Ecuador, four new species have been recognized and are here described and illustrated: *Calyptranthes websteri*, *Eugenia concava*, *Eugenia grossa*, and *Myrcia subcordifolia*.

Calyptranthes websteri B. Holst & M.L. Kawasaki, sp. nov. (Fig. 1). Type: ECUADOR. Pichincha: Canton Quito, Parroquia Nanegal, Bosque Protectora Maquipucuna, Montañas de Maquipucuna, rain forest on main ridge of Cerro Sosa, ca. 7 km airline SE of Nanegal, 2150 m, 00°04.5'N, 78°36.5'W, 8 Jul 1992 (fl), G.L. Webster, F. Hrusa & C. Zurinsky 29164 (HOLOTYPE: DAV; ISOTYPES: AAU, SEL).

Arbor, indumento minute dibrachiato rubello; foliis $13.6-20.2 \times 6.1-9.4$ cm, ellipticis vel leviter ovatis vel obovatis, caudatis, venis mediis supra concavis, venis marginalibus 2-6 mm remotis; petiolis 9-13 mm longis; paniculis multifloris, pedunculis et pedicelis longis et gracilibus; alabastris ca. 5 mm longis, petalis absentibus.

Tree to 10 m tall or scrambling tree; trichomes dibrachiate, minute, with very short arms, reddish, abundant on new growth; branchlets terete to slightly compressed. Leaf blades generally elliptic to very slightly ovate or obovate, $13.6-20.2 \times 6.1-9.4$ cm, chartaceous when dry, bearing scattered trichomes, these deciduous with age, olive green to brown on upper surface when mature, lighter yellow green on lower surface, immature leaves with slightly yellowish grey pallor due to waxy layer; apex caudate, the tip 7-19 mm long, margins slightly revolute; base attenuate to cuneate; midvein impressed on upper surface, convex and slightly prominent on lower surface; lateral veins 19–26 pairs, flat on upper and convex on lower surfaces, principal marginal vein 2-6 mm distant from the edge, slightly less prominent than the lateral veins, secondary marginal vein ca. 1 mm from edge, faintly evident; glands scattered, translucid on both surfaces; petiole 9–13 mm long, ca. 2 mm thick, margins inrolled and meeting to form a tunneled petiole. Inflorescences paniculate, decompound, many-flowered, 2 or 4 borne together on abortive branches, when young, densely covered by a light gray-tan waxy bloom over the small, appressed trichomes; bracts early deciduous, ca. 8 x 1 mm; peduncles 1-5 cm long, the first node bearing 3 or 5(7) branches and upper nodes bearing usually 3 branches, all branches from single node in same plane, the branches terminating with 3 long-pedicellate flowers, the terminal one sometimes abortive; pedicels 18–37 mm long; bracteoles early deciduous, 3–4 mm long. **Flowers:** buds globose, ca. 5×5 mm, with a light gray-tan waxy bloom, particularly on lower 2/3 of bud; calyptra ca. 3 x 5 mm, generally lighter in color than hypanthium, apiculum barely evident; petals lacking; stamens numerous; filaments ca. 6 mm long; anthers ca. 0.5 mm long; style ca. 5 mm long; hypanthium ca. 4 mm long, the free portion ca. 2 mm long; ovary 2-locular, ovules 2 per locule. Fruits not known.

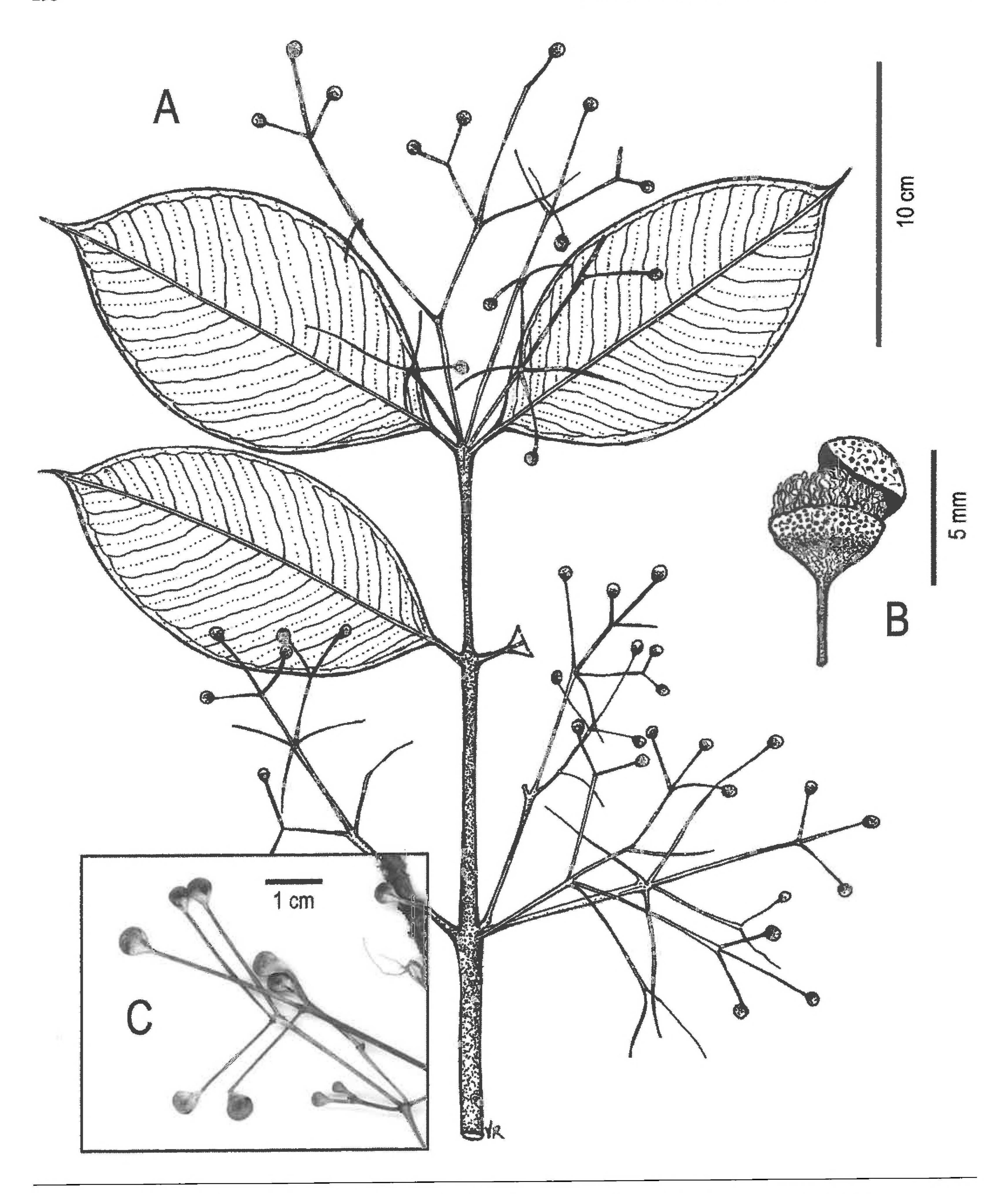


Fig. 1. Calyptranthes websteri B. Holst & M.L. Kawasaki: A. Habit. B. Flower. C. Digital scan of flower buds. (A—C, Webster et al. 29164).

Distribution.—Known only from Maquipucuna, Pichincha province, in primary rain forests at 2100–2150 m elevation.

Calyptranthes websteri is distinguished from all other Andean species by the elongate peduncles and pedicels of the many-flowered inflorescence. This very distinctive species is named in memory of its discoverer, Grady Webster, an astute student of the Euphorbiaceae and respected teacher at the University of California, Davis, who passed away in 2005.

Additional collection examined: **ECUADOR. Pichincha:** Canton Quito, Parroquia Nanegal, Bosque Protectora Maquipucuna, Montañas de Maquipucuna, Cerro Sosa, primary rain forest on main ridge, 2100–2150 m, 00°05'N, 78°37'W, 9 Jul 1991 (fl), *G.L. Webster et al.* 28884 (AAU, DAV, MO, QCNE).

Eugenia concava B. Holst & M.L. Kawasaki, sp. nov. (Fig. 2). Type: ECUADOR. Guayas: Guayaquil, Bosque Protector Cerro Blanco, road Guayaquil–Salinas, Km 15, 200–300 m, 02°10′S, 80°08′W, Jan 1994 (fl), T. Núñez & A. Hernández 197 (HOLOTYPE: QCNE; ISOTYPES: MO, SEL).

Frutex vel arbor; foliis plerunque ellipticis, chartaceis, glabris, abrupte acuminatis, nervo medio supra prominente; floribus fasciculatis, pedicellis gracilibus; calycis lobis concavis; fructis ellipsoideis.

Shrub or tree, 2.5–10 m tall, mostly glabrous; twigs smooth, trunk and older branches with bark peeling in plates or strips. Leaf **blades** mostly elliptic, less commonly ovate or obovate, chartaceous, 4–7.5 × 2.5–4 cm, drying olive green or greenish brown; upper and lower surfaces glabrous; glands punctiform, plane or slightly salient on both surfaces; midvein convex on the upper surface; lateral veins 10–12 pairs, salient on both surfaces; marginal veins 2, the innermost slightly arched, 1–3 mm from the margin; base usually obtuse, rarely cuneate; apex abruptly acuminate, the acumen ca. 1 cm long; petioles 2–3 mm long, flattened, glabrous. **Inflorescences** appearing fasciculate, with up to 4 flowers, axillary or subterminal, the pedicels 1–1.5 cm long, slender, glabrous; bracteoles ovate, ca. 1 mm long, ciliate, persistent. **Flowers** 4-merous, buds ca. 5 mm long; hypanthium ca. 2 mm long, glabrous; calyx-lobes ovate to lanceolate, 3–4 mm long, obtuse, concave, glabrous; petals suborbicular, ca. 4 mm diam., ciliate or glabrous; disk ca. 3 mm diam., glabrous; stamens ca. 5 mm long; style ca. 6 mm long; ovary 2-locular, ovules several per locule. **Fruits** berries, ellipsoid, 1–1.5 × 0.8–1 cm, glabrous, red, gland-dotted; seed 1, ca. 9 × 6 mm, the seed coat membranous; embryo eugenioid, the cotyledons fleshy, connate, the radicle indistinct.

Distribution.—Eugenia concava is known only from Guayas province, occurring in dry forests at 200–500 m elevation.

Eugenia concava is characterized by small, elliptic, glabrous leaves, abruptly acuminate at apex, the midvein convex on the upper surface; the inflorescences are fasciculate, with slender pedicels and flowers with concave calyx lobes. The pulp is characterized as "sweet" by Palacios & Rubio (9977). Eugenia concava resembles E. rhombea Krug & Urb., a species from Southern Florida, Mexico, Central America, and West Indies (McVaugh, 1989), but differs by the leaves with distinctly convex midvein (vs. concave), lacking a distinct cartilaginous leaf margin (vs. present), and by the ellipsoid fruits (vs. globose).

Additional collections examined: **ECUADOR. Guayas:** Bosque Protector Cerro Blanco, 350 m, 02°10'S, 79°58'W, 16 Jan 1994 (fl), *X. Cornejo & C. Bonifaz* 1387 (SEL); Guayaquil, Bosque Protector Cerro Blanco, 15 km W of Guayaquil, near Quebrada Papagayo, 230 m, 02°10'S, 79°58'W, 27 May 1996 (fr), *D. Neill & T. Núñez* 10474 (F, MO, SEL); Guayaquil, Cerro Blanco, coastal road, Km 15, 350 m, 02°1'S, 79°58'W, 16 Mar 1992 (fr), *W. Palacios & D. Rubio* 9944 (MO, SEL); Guayaquil, Cerro Azul, coastal road, Km 12, 500 m, 02°10'S, 79°58'W, 18 Mar 1992 (fr), *W. Palacios & D. Rubio* 9977 (F, MO, QCNE, SEL); Guayaquil, Bosque Protector Cerro Blanco, road to Salinas, Km 15, 400 m, 02°10'S, 79°58'W, 21–25 Jan 1992 (fl), *D. Rubio & G. Tipaz* 2321 (MO, SEL); Guayaquil, Bosque Protector Cerro Blanco, road to Salinas, Km 15, 400 m, 02°10'S, 79°58'W, 21–25 Jan 1992 (fl), *D. Rubio & G. Tipaz* 2348 (MO, SEL).

Eugenia grossa B. Holst & M.L. Kawasaki, sp. nov. (Fig. 3). Type. ECUADOR. Carchi: Tulcan Canton, Parroquia Tobar Donoso, Reserva Etnica Awá, Sector Sabalera, 650–1000 m, 01°00'N, 78°24'W, 18–28 Jun 1992 (fl, fr), G. Tipaz, J. Zuleta & N. Guanga 1370 (HOLOTYPE: QCNE; ISOTYPES: F, MO, SEL).

Arbor, indumento aureo-brunneo; foliis $27-45 \times 19-25$ cm, ellipticis vel ovatis vel obovatis, venis mediis supra concavis, venis marginalibus 12-21 mm remotis; racemis 15-21 mm longis, 6-floris, pedicellis 1-4 cm longis, floribus ca. 13 mm longis.

Tree 6-15 m tall, pubescent to puberulent on new growth. **Leaf blades** elliptic to broadly elliptic, chartaceous, $27-45 \times 19-25$ cm, brown on upper surface, pubescent along veins, the lower surface evenly pubescent, trichomes short and golden brown; glands indistinct above, dark and numerous below; midvein broadly and shallowly concave on upper surface, all veins convex and prominent on underside (midvein extremely prominent); lateral veins 11-16 pairs, first lateral (or secondary) vein extending to form inframarginal vein and straightening out; marginal veins 3, the inner, most conspicuous vein 12-21 mm from blade margin, the middle marginal vein 2-6 mm from margin, and a 3rd inframarginal vein, very faint, ca. 1 mm from margin; apex acuminate; base rounded to obtuse to very slightly cordate; petioles 13-20 mm long, 4-6

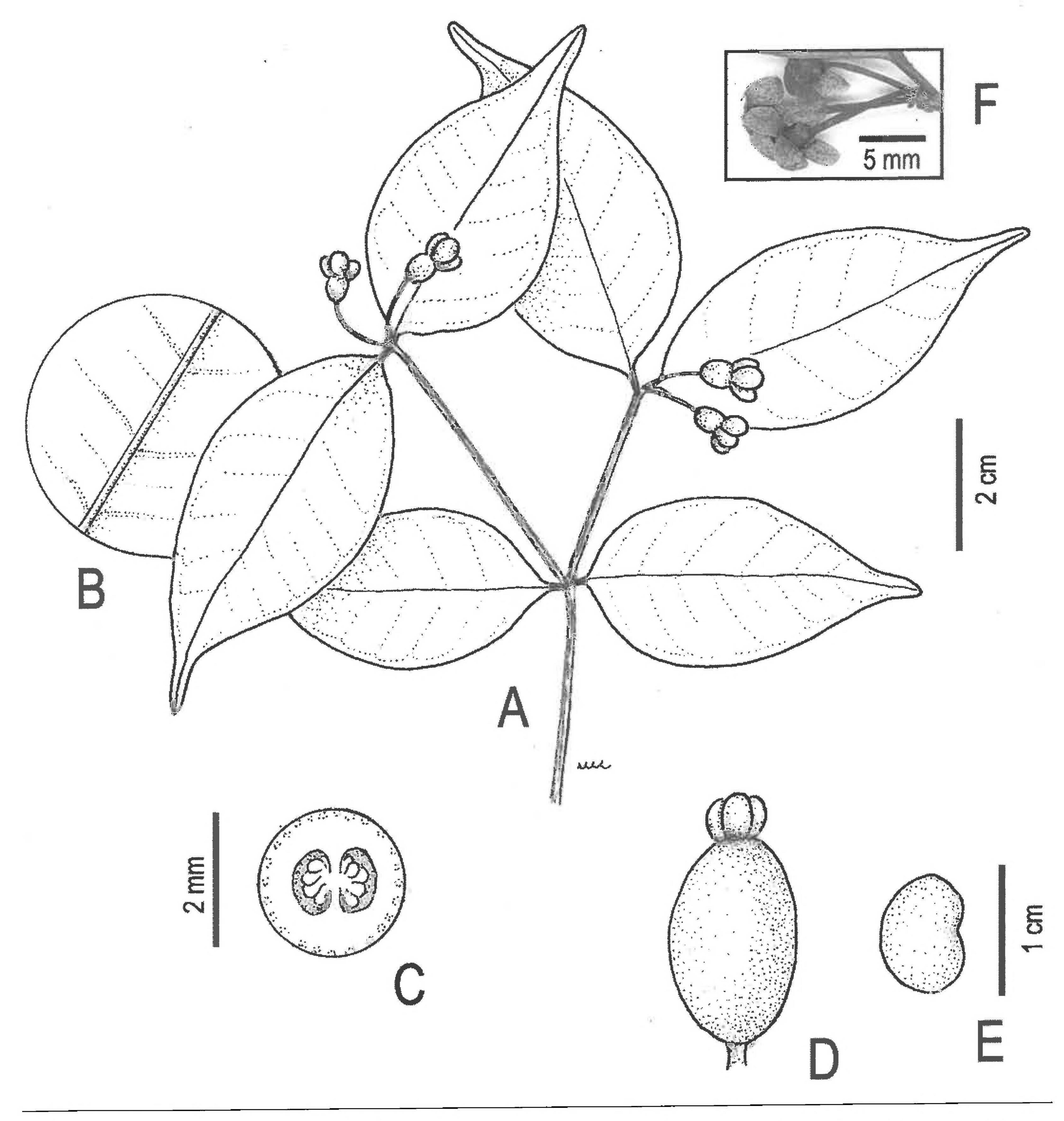


Fig. 2. Eugenia concava B. Holst & M.L. Kawasaki: A. Part of stem with leaves and young fruits. B. Detail of convex midvein on adaxial surface of leaves. C. Transversal section of ovary. D. Fruit. E. Embryo. F. Digital scan of flowers past anthesis (A—B, Neill & Núñez 10474; C, Rubio & Tipaz 2348; D—E, Palacios & Rubio 9977; F, Nuñez & Hernández 197).

mm diam., densely pubescent with golden trichomes. **Inflorescences** racemose, the axis $15-21 \times 3-4$ mm, pubescent, often at leafless nodes, 3 pairs of pedicels per peduncle; bracts deciduous; bracteoles fused and cupping hypanthium, 10-12 (14-15 hydrated) mm long, pubescent inside and out, deciduous after anthesis, pedicel in flower ca. 1 cm long, lengthening and thickening considerably in fruit, to 4 cm long. **Flowers** 4-merous, buds roundish, ca. 13 mm long; hypanthium abundantly pubescent inside and out, ca. 6 mm wide at summit, hypanthium after removal of bracteoles displaying slightly longer trichomes, having a hint of red or dark orange, apparent wrinkles or bumpy protrusions (some of which corresponding to marks on inner surface of bracteoles); outer calyx lobes suborbicular, ca. 9×9 mm, the inner lobes more closely ovate, ca. 10×7 mm, the tip acute (with triangular or acuminate shaped discoloration or mark, perhaps where

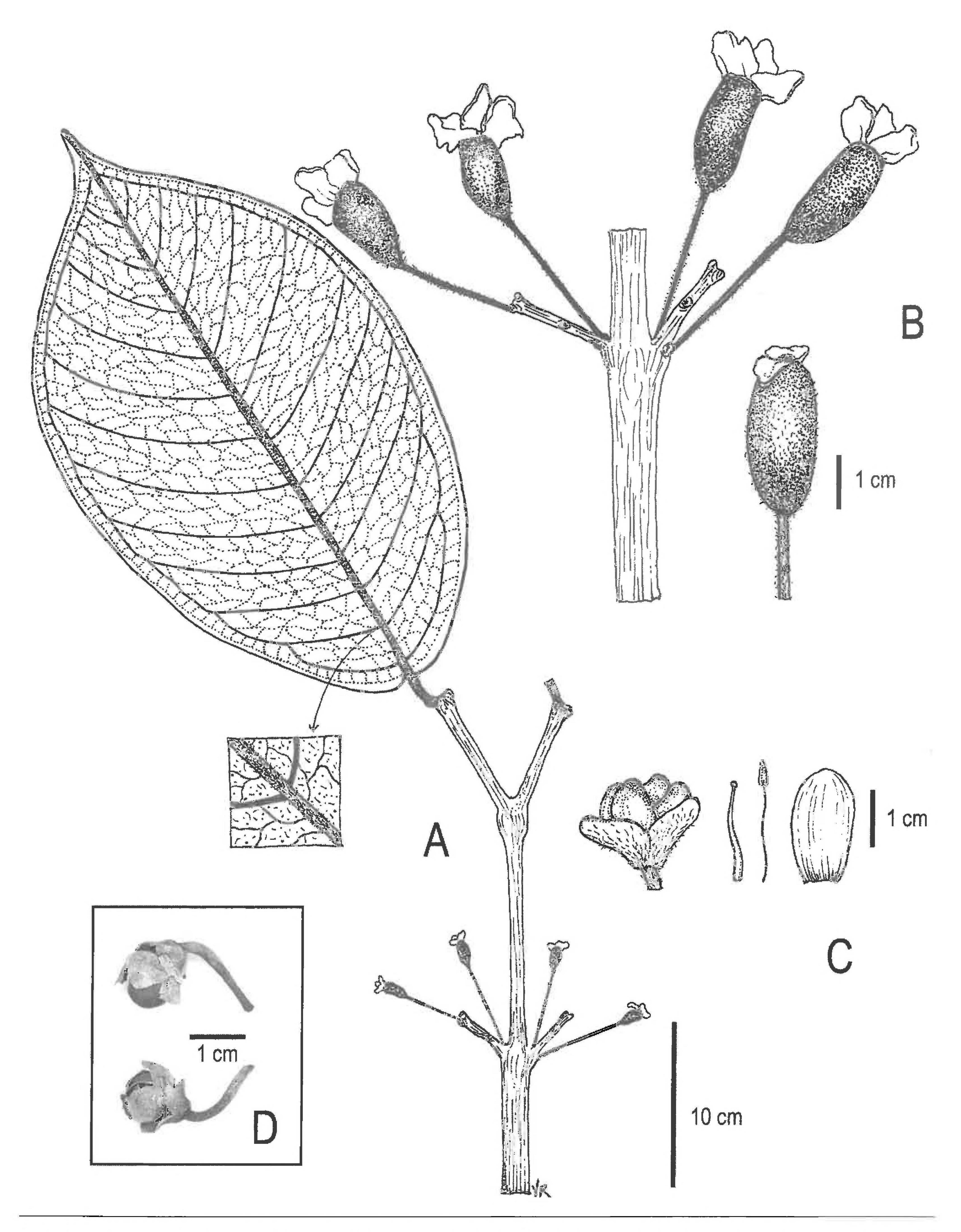


Fig. 3. Eugenia grossa B. Holst & M.L. Kawasaki: A. Branch habit. B. Young fruits. C. Flower bud, style and stigma, stamen, petal. D. Digital scan of flower buds. (A—B, Aulestia et al. 830; C—D, Tipaz et al. 1370).

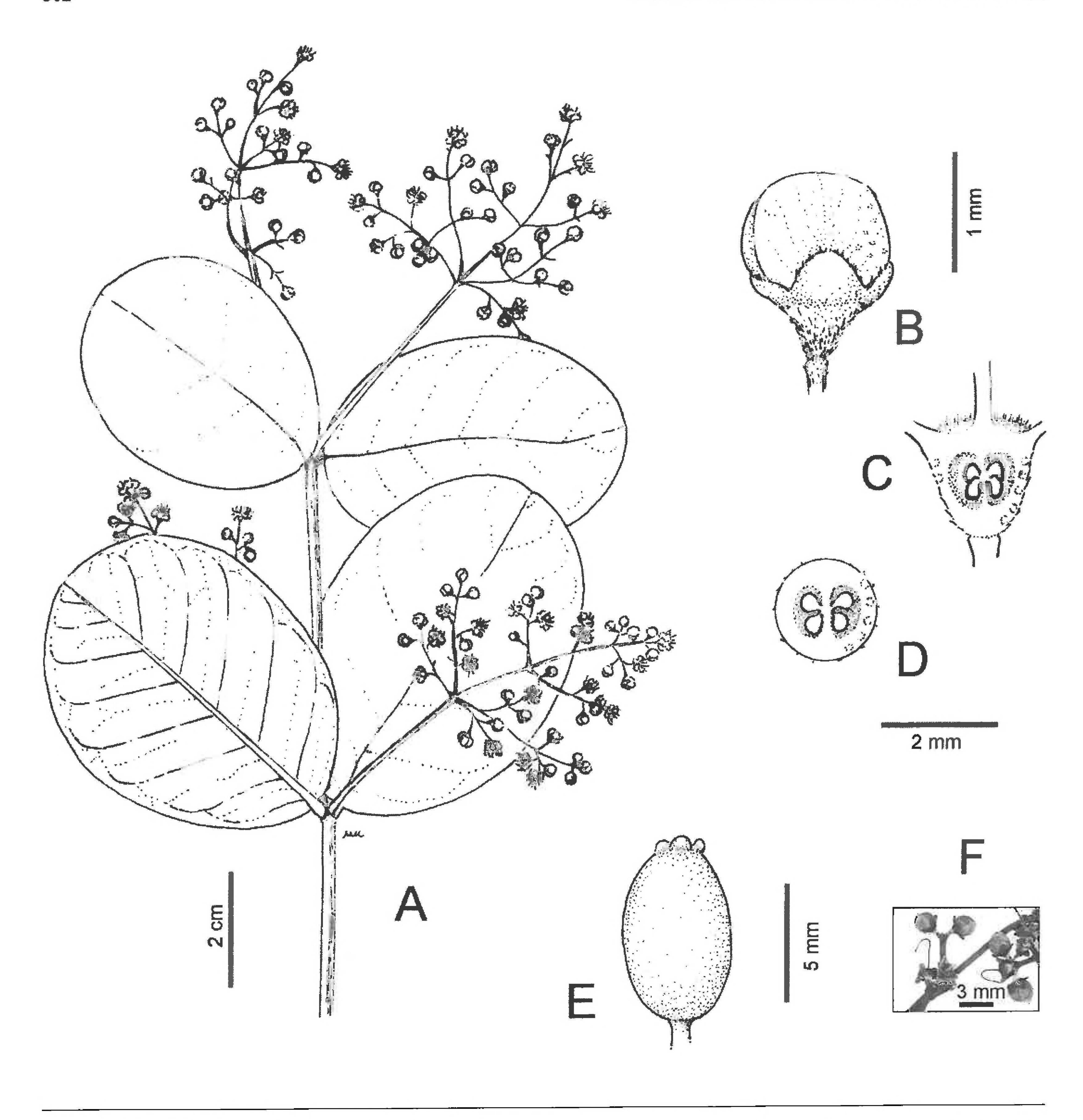


Fig. 4. Myrcia subcordifolia B. Holst & M.L. Kawasaki: A. Leaves and inflorescences. B. Flower bud. C. Medial section of ovary. D. Cross section of ovary. E. Fruit. F. Digital scan of flower buds. (A—C, Palacios 6723; D—F, Quizhpe et al. 145).

trichomes grow in a different direction, possibly where bracteoles lobe rests), the margin more or less entire; petals cream color (live) with plentiful glandular dots, ciliate, rounded eliptical, $16-21 \times 11-12$ mm, the tip more or less obtuse; stamens numerous (approaching 100), the anthers ca. 1 mm long, the filaments 17–20 mm long. **Fruits** berries resembling drupes, oblong, $13-28 \times 8-16$ mm, the hairs clustered in groups, black at maturity; seed 1, mature size unknown, the seed coat membranous; embryo eugenioid, the cotyledons fleshy, connate, the radicle indistinct.

Distribution.—Known only from Carchi province (Reserva Etnica Awá), in primary rain forests and premontane forests at 650–1800 m elevation.

Eugenia grossa is characterized by the very large leaves (27–45 \times 19–25 cm), brown to yellowish brown-

pubescent and large flower buds (ca. 13 mm long), with connate, deciduous bracteoles. Tipaz et al. (1370) describe the fruit as "edible" and note the wood is used to make tool handles and walking canes.

Additional collections examined: **ECUADOR. Carchi:** Maldonado, Parroquia Tobar Donoso, Reserva Etnica Awá, Sector Sabalera, 900 m, 00°55'N, 78°32'W, 22 Nov 1992 (fr), *C. Aulestia et al. 830* (MO, QCNE, SEL); Tulcan, Parroquia Tobar Donoso, Reserva Etnica Awá, Centro El Baboso, 1800 m, 00°53'N, 78°25'W, 17–27 Aug 1992 (fr), *C. Aulestia et al. 1817* (MO, QCNE, SEL).

Myrcia subcordifolia B. Holst & M.L. Kawasaki, sp. nov. (Fig. 4). Type: ECUADOR. Zamora-Chinchipe: Nangaritza Cantón, valley of Río Nangaritza, Miazi, 04°18′S, 78°40′W, 1200 m, 10 Dec 1990 (fl), W. Palacios 6723 (HOLOTYPE: QCNE; ISOTYPES: F, MO, SEL).

Arbor; foliis suborbicularis usque ellipticis, coriaceis, glabris, saepe subcordatis; paniculis multifloris; alabastris 2–3 mm longis.

Tree 4–10 m tall, mostly glabrous, the few trichomes on inflorescences and flowers yellowish to yellowish white. **Leaf blades** suborbicular to elliptic, or ovate, 4–9.5 × 3–6 cm, coriaceous, plane, glabrous, drying dark brown to brownish above, paler below; apex obtuse to rounded; base rounded or broadly subcordate; midvein impressed above, convex below; lateral veins 7–10 pairs, slightly convex on both surfaces; marginal veins 2, the innermost 1–2 mm from blade margin, similar to the lateral veins; glands numerous, punctiform, indistinct or impressed above, salient below; petiole 1–3 mm long, channeled, puberulous to glabrous, black. **Inflorescences** paniculate, subterminal, multiflorous (approx. 20–60 flowers), 6–12 cm long, puberulous; bracts and bracteoles not seen, early deciduous. **Flowers** 5-merous, buds obvoid to subglobose, 2–3 mm long; calyx-lobes suborbicular, to 1 mm long, appressed-pubescent to puberulous without, glabrous within; petals suborbicular, ca. 2 mm diam.; stamens numerous, the filaments ca. 4–5 mm long, the anthers ca. 0.5 mm long; style ca. 5 mm long, the stigma punctiform; hypanthium not prolonged beyond the ovary, sericeous without; disk ca. 2 mm diam., hirsutulous; ovary 2-locular, 2 ovules per locule. **Fruits** (immature) berries, ellipsoid, ca. 5 mm long, glabrous; seeds not seen.

Distribution.—This species is known from Zamora-Chinchipe and Morona-Santiago, in the Cordillera del Cóndor region; it occurs in primary, premontane wet forests, at 900–1200 m elevation.

Myrcia subcordifolia resembles Myrcia clusiifolia (Kunth) DC., a species known from lowland, white-sand savannas from Venezuela, Colombia, and Amazonian Brazil (Holst et al., 2003). In M. subcordifolia, however, the leaves are subsessile with petioles 1–3 mm long and plane (vs. petiolate with petioles 5–8 mm long, and the leaves convex-conduplicate), the lateral veins are slightly convex, and the veinlets are indistinct (vs. veins strongly convex and veinlets distinctly reticulate) on both surfaces.

Additional collections examined: **ECUADOR. Morona-Santiago:** Limon Indanza, Cordillera del Cóndor, Centro Shuar Yunkumas, Asociación Nunkui, Cerro Chuank Naint, 03°03'34"S, 78°14'45"W, 1150 m, 19 Dec 2005 (fl), *C. Morales et al.* 1595 (F, MO, QCNE). **Zamora-Chinchipe:** Nangaritza, region of Cordillera del Cóndor, upper river basin of Río Nangaritza, Sector Las Orquídeas, W of river, 04°12'22"S, 78°39'16"W, 1100 m, 7 Aug 2002 (fl, yfr), *W. Quizhpe et al.* 145 (F, MO, SEL); Nangaritza, region of Cordillera del Cóndor, 900 m, 04°17'10"S, 78°38'50"W, 24 Jul 2003 (fl), *W. Quizhpe et al.* 638 (MO, SEL); El Pangui, Cordillera del Cóndor, W slopes, Machinaza river basin, 03°37'31"S, 78°31'50"W, 1050 m, 22 Mar 2006 (fl), *W. Quizhpe & F. Luisier* 2043 (F, LOJA, MO).

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